equipment and stating that as an initial measure the scheme may be tried only with reference to Science subjects, *viz.*, Physics, Chemistry and Elementary Biology and extended to other subjects later on if the experiment yielded satisfactory results.

ORDER No. D. 9190-91—EDN. 563-28-6, DATED 13TH FEBRUARY 1930.

The revision of the syllabus in Elementary Science for the S. S. L. C. Course as proposed by the S. S. L. C. Board, which has been agreed to by the University, is approved and the revised syllabus is appended to this order.

The suggestion of the University that the High Schools should be visited once in three years by Professors in the several subjects at the invitation of the Director of Public Instruction which has been agreed to by the latter, is also approved, the arrangement however, being tried in the first instance in respect of the Science subjects only, *viz.*, Physics, Chemistry and Elementary Biology.

N. RAMA RAO,
Secretary to Government,
Development Departments.

REVISED SYLLABUS IN ELEMENTARY SCIENCE—PHYSICS.

IV FORM.

1. Measurement of length, British and Metric Units, the use of dividers and callipers (the slide callipers without the vernier) units of area, measurement of the areas of the plane surfaces, Units of volume, measurement of volumes of regular and irregular solids, use of graduated jar. (Chapter I, omitting paras 10 and 11).

2. Properties of matter (Hardness, malleability, etc.) Distinction between solids, liquids and gases. (Chapter III.)

3. Measurement of mass, use of common spring balance, Density and its measurement. (Chapter II)

4. Liquids find their level, they exert pressure on the sides of the containing vessel, upward pressure in a liquid, the Bramah Press, Air has weight, pressure of air and its measurement by the barometer, variation of barometer column with height above sea level. The syringe. (Chapter III, paras 15-18, Chapter IV, 1-3, Chapter V. 1-13.)

5. *Heat.*—Expansion of solids, liquids, and gases illustrated by qualitative experiments, temperature and its measurement by the use of mercury in glass thermometers, the Centigrade and Fahrenheit scales, use of Rutherford's maximum and minimum thermometers. (Chapter IX, omitting para 22.)

V FORM.

1. Buoyancy and the principles of Archimedes, Determination of the Specific gravities of liquids and insoluble solids, Floating bodies and the use of the common Hydrometer, comparison of densities of liquids by balancing liquid columns. The lift pump, the siphon and the air pump. (Chapter IV. Paras 4-12, and Chapter V. 18-23.)

2. Speed, velocity and acceleration. Attraction of earth on bodies, mass and weight.

3. Change of state, melting and boiling points, the effect of pressure on the boiling point of a liquid. (Chapter X.)

N. B.—Only qualitative idea of specific heat and latent heat need be given.

4. Conduction, convection and radiation of heat illustrated by simple experiments, Ventilation, simple explanation of how winds and ocean currents are caused, formation of dew. (Chapter XI, omitting heat engines.)

5. *Light.*—Light is propagated in straight lines, formation of shadows, the pin-hole camera, simple explanation of how eclipses are caused, the laws of reflection of light and their experimental verification, the formation of image in a plane mirror. (Chapter XII 1-9.)

VI FORM.

1. The laws of the simple pendulum treated experimentally. Common illustrations of the third law of motion, work and energy treated in an elementary manner. Chapter I, paras 10 and 11, Chapter VII, omitting paras 8, 12, 13 and 15 to 20.)

2. Centre of gravity and its experimental determination in simple cases. Elementary ideas of stable, unstable and neutral equilibriums, the three kinds of lever, the single movable pulley and inclined plane treated experimentally. (Chapter VIII.)

3. *Light.*—(Continued):—Reflection from concave mirror, graphical construction for the position of the image of a small object placed on the axis. (Chapter XII, paras 10 and 11.)

Refraction.—Laws of refraction of light. Refractive index of water and glass. Tracing the course of rays through a parallel sided glass of glass and through a prism. Refraction through a convex lens, Definition of the principal focus and focal length of a convex lens. Graphical construction for the position of the image of small object placed on the axis. (Chapter XII, 12 to 23.)

4. The analysis of white light by a prism, recombination of the rays, Newton's Colour disc, simple explanation of why certain objects look coloured. (Information not found in Chapter XII to be supplemented by the teacher.)

5. An elementary treatment of the following optical instruments :—

(1) The Simple microscope.
(2) The Compound microscope.
(3) The Telescope.
(4) The Photographic Camera.
(5) The Magic Lantern.

Tracing the course of rays from the object to the image in these instruments. (Chapter XII, 24 to 28.)

6. *Magnetism.*—Leading facts of magnetism, methods of making magnets ; when a magnet is cut into two, each part is a magnet. Magnetic induction, the earth is a magnet. Compass needle (Chapter XIII, 1 to 7 and 12 to 15.)

7. *Current Electricity.*—The simple voltaic cell, Polarisation, Daniell's cell, and the Leclanche cell. The action of an electric current on a magnetic needle. Simple galvanoscope. Qualitative ideas regarding electric resistance. The electro-magnet, electrolysis of water and copper sulphate solution by an electric current. The heating effect of a current treated qualitatively, the electric glow pump, the electric bell, simple needle telegraphy. (Chapter XIII, 16 to 29 and 34 and 35.)

8. Production of sound by vibrating bodies, material medium necessary for sound propagation, sound takes time to travel, sound travels through solids, liquids. Echoes caused by reflection of sound. Distinction between (i) noise and musical note and (2) pitch and intensity. (Chapter VI.)

PRACTICAL PHYSICS.

V FORM.

1. Use of metre scale, measurement of length in inches and centimetres and hence determination of the relation between the inch and the centimetre.

2. Use of Dividers.

3. Use of inside and outside callipers and the slide callipers without the vernier.

4. Determination of the areas of regular and irregular plane figures with the use of graph paper and in the case of regular figures verification of formulae.

5. Determination of volumes of regular and irregular bodies using a graduated jar and verification of formulae in the case of regular bodies.

6. 7. 8. (i) The use of common balance (ii) and (iii) determination of the densities of solids and liquids by measurements of mass and volume.

9. The study of relation between the load and extension of a spring balance and the graphical representation of the result, use of the spring balance.

10. The action of (i) the air pump, (ii) the water pump, (iii) the Bramah Press and (iv) the Siphon. Students should be asked to make sketches of these apparatus.)

11. Determination of melting point of ice or paraffin wax and the boiling point of water, the use of clinical thermometer.

12. Experimental verification of the principle of Archemedes. Determination of specific gravities of liquids and insoluble solids.

13. Verification of the laws of reflection of light using a plane mirror.

VI FORM.

1. Determination of the specific gravities of liquids and solids using the specific gravity bottle. Use of the common hydrometer.

2. Relative densities of liquids by balancing liquid columns.

3. Experimental verification of the "Law of Moments".

4. Centre of gravity of plane laminae with regular and irregular boundaries.

5. Verification of the laws of simple pendulum.

6. Verification of the laws of reflection of light and the determination of refractive index by tracing the course of light rays through a parallel-sided block of glass.

7. Experimental verification of the formula 1 D plus 1 d = 1f in the case of convex lens.

8. The tracing of rays through a prism and qualitative experiments on the analysis of white light by a prism.

9. Simple experiments with magnets. The Mariner's compass.

10. The study of the following cells:—

(1) The simple voltaic cell.

(2) The Daniell's cell.

(3) The Leclanche cell.

The magnetic effect of an electric current and Ampere's rule.

11. The use of the simple galvanoscope.

To sketch the parts of an electric bell and describe the function of each.

CHEMISTRY.

N. B.—The lectures should be well illustrated with experiments, and none which can be shown, should be left to be performed by the students during their practical work. Chemical Equations are not expected.

IV FORM.

1. Solution of solids, liquids and gases in water; filtration, decantation, crystallization, sublimation, efflorescence and deliquescence with examples. 6 Lessons.

2. Rusting of Iron; changes caused in the air enclosed over water when Iron rusts; burning of a piece of phosphorus and candle in air contained in a bottle. 2 or 3 Lessons.

3. Preparation, properties and uses of oxygen. Oxidation and combustion. (Sulphur, carbon, phosphorus, magnesium and iron wire may be used as illustrations.) Increase in weight when magnesium is burnt in air or oxygen. 6 Lessons.

4. Air and its constituents; not a chemical compound. Elementary ideas of elements, compounds, combination, decomposition, illustrated by simple experiments. 6 to 8 Lessons.

5. Decomposition of water by metals and by an electric current. Preparation, properties and uses of hydrogen; preparation of hydrogen by the action of dilute acids on metals, zinc, aluminium or magnesium. 4 to 6 Lessons.

V FORM.

6. Carbon, occurrence in nature; diamond, graphite and their uses; the uses of wood charcoal and bone charcoal and lamp black. Carbon-di-oxide in nature produced during respiration, burning of wood and of lime stone in kilns. Carbon-di-oxide produced during fermentation. Preparation, properties and uses of carbon-di-oxide. The action of plants on the oxide present in air. Quick-lime, slaked lime, lime water, hard and soft waters. 8 to 10 Lessons.

7. Sulphur, occurrence, properties and uses; its allotropic forms; preparation (by the lecturer) of sulphuric acid; its properties and uses. Sulphur-di-oxide produced when the acid is heated with copper, charcoal, etc., and when Sulphur is burnt in air or Oxygen. This oxide dissolves in water giving an acid, as tested with litmus. 6 Lessons.

8. Preparation, properties and uses of nitric acid. Action of the concentrated acid on red hot charcoal and on copper. Brown fumes of oxides of nitrogen evolved (their nature need not be detailed), as a test for the acid.

Preparation, properties and uses of Ammonia; properties and uses of ammonium nitrate, sulphate and chloride. 6 Lessons.

9. Preparation, properties and uses of hydrochloric acid and of chlorine. Preparation and uses of bleaching powder. 4 to 6 Lessons.

VI FORM.

10. General ideas about acids, bases, salts and alkalies. Nautralisation. Action of the acids already studied on metal like *Zinc*, Copper and Iron. 8 Lessons.

11. Properties and uses of Yellow and Red Phosphorus. 2 Lessons.

12. Manufacture, properties and uses of cast iron (without entering into technical details) and of common salt. 4 Lessons.

13. Study of action of metals *Zinc*, Sodium, Copper, Silver and Aluminium on Oxygen, on water and on acids. (Basic and acidic oxides. Bases and acids.) 4 Lessons.

14. Methods of preparation of the following salts (i) Silver-nitrate from Silver, (ii) Magnesium sulphate from magnesite, (iii) Ammonium Chloride from Ammonia. 3 Lessons.

15. General properties of metals and comparison with non-metals. 2 Lessons.

16. Properties and use of (i) Iron and ferrous sulphate, (ii) Aluminium and Alum, (iii) *Zinc* and *Zinc* Oxide, (iv) Caustic soda with reference to soap manufacture, (v) Carbonate and bi-carbonate of soda, (vi) Potassium nitrate, (vii) Quick Lime, Slaked Lime and Gypsum, (viii) Copper and Copper Sulphate, (ix) Mercury and mercuric oxide and (x) Silver and Silver Nitrate. 10 Lessons.

N. B.—The scope of items to be studied in Physics and Chemistry syllabuses is determined by the text-book Gregory and Hodges "Experimental Science for Indian Schools".

BIOLOGY.

No change in the existing syllabus.

Mysore Co-operative Land Mortgage Bank.

READ—

Bye-law No. 66 of the bye-laws issued under the Government Order No. G. 5927-8—L. M, 4-29-3, dated the 11th November 1929, about the Secretary of the Land Mortgage Bank.

ORDER THEREON NO. G. 9916-7—L. M. 14-29-9, DATED 18TH FEBRUARY 1930.

In the bye-law read above, there is no indication as to the authority competent to appoint the Secretary of the Land Mortgage Bank. He is a salaried officer, but is classed among the office-bearers with the President and the Treasurer. He is responsible for the executive administration of the Bank subject to the control of the President. He should, therefore, be appointed by the Board of Directors subject to the approval of Government. The Bye-law 66 will accordingly be modified as follows:—

66—Add the sentence " He shall be appointed by the Board of Directors subject to the approval of Government " after the first sentence in the bye-law.

N. RAMA RAO,
Secretary to Government,
Development Departments.